P. 368 #11-15

$\frac{1}{2^3} = \frac{1}{8}$

(11) $\dfrac{(2r^{-1}s^2t^0)^{-2}}{2rs}$ $\quad \dfrac{2^{-2}r^2s^{-4}t^0}{2rs}$ $= 2^{-3}r^1s^{-5}\cdot 1$ $\quad \frac{1}{8}\cdot r\cdot\frac{1}{s^5} = \boxed{\dfrac{r}{8s^5}}$

(12) $x^5(2x)^3 = x^5 2^3 x^3 = \boxed{8x^8}$

(13) $\dfrac{x^4x^{-2}}{x^{-5}} = \dfrac{x^2}{x^{-5}} = x^{2--5} = \boxed{x^7}$

(14) $\dfrac{(12x^2y^6)^2}{8x^4y^7} = \dfrac{144x^4y^{12}}{8x^4y^7} = \boxed{18y^5}$

(15) $(4p^2q)(p^2q^3) = \boxed{4p^4q^4}$

7.1

(23) $\sqrt{x^8y^{18}} = x^4|y^9|$

(24) $\sqrt{64b^{48}} = 8b^{24}$

(63) $\sqrt[n]{m^{2n}} = m^2$

(64) $\sqrt[n]{m^{3n}} = |m^3|$

(65) $\sqrt[n]{m^{4n}} = m^4$

(62) $\sqrt[n]{m^n} = |m|$

if n is even then use $|\ |$

$\sqrt{x^2} = |x|$

$\sqrt[3]{x^3} = x$

$\sqrt[3]{(-2)^3} = \sqrt[3]{-8} = -2$

$\sqrt{(-2)^2} = \sqrt{4} = 2$

$\sqrt{2^2} = \sqrt{4} = 2$

(66) m

(67) m^2

(68) m^3

(69) m^4

b/c n is odd we don't have absolute value

$\sqrt{2} \cdot \sqrt{8} = \sqrt{16}$

ex

$\sqrt{8} = \sqrt{4} \cdot \sqrt{2}$

$\sqrt{8} = 2\sqrt{2}$ ★

$\frac{4}{8} = \frac{1}{2}$

$\sqrt{12} = \sqrt{4} \cdot \sqrt{3}$

$\sqrt{12} = 2\sqrt{3}$ ★

1
4
9
16
25
36
49
64
81
100
etc.

$\sqrt{32} = \sqrt{16} \cdot \sqrt{2}$

$\sqrt{32} = 4\sqrt{2}$

$\sqrt{200} = \sqrt{100} \cdot \sqrt{2}$

$\sqrt{200} = 10\sqrt{2}$

Try to reduce

1
4
9
16
25
36
49
64
81
100

① $\sqrt{18} = \sqrt{9} \cdot \sqrt{2} = \boxed{3\sqrt{2}}$

② $\sqrt{250} = \sqrt{25} \cdot \sqrt{10} = \boxed{5\sqrt{10}}$

③ $\sqrt{72} = \sqrt{36} \cdot \sqrt{2} = \boxed{6\sqrt{2}}$

$= \sqrt{9} \cdot \sqrt{8} = 3\sqrt{8} = 3 \cdot \sqrt{4} \cdot \sqrt{2}$

$= 3 \cdot 2 \cdot \sqrt{2} = \boxed{6\sqrt{2}}$

④ $\sqrt{96} = \sqrt{16} \cdot \sqrt{6} = \boxed{4\sqrt{6}}$

$\sqrt{x^4} = x^2$

$\sqrt[3]{x^{12}} = x^4$

$\sqrt[3]{y^9} = y^3$

$\sqrt{a^{16}} = a^8$

$\sqrt[2]{x^5} = \sqrt{(x \cdot x)(x \cdot x) \cdot x}$

$= x^2\sqrt{x}$

$= x^2\sqrt{x}$

$\sqrt{x^5} = \sqrt{x^2} \cdot \sqrt{x^2} \cdot \sqrt{x}$

$\downarrow$

$x \cdot x\sqrt{x}$

$= x^2\sqrt{x}$

$\sqrt[3]{x^5} = x\sqrt[3]{x^2}$

$= \sqrt[3]{x^3} \cdot \sqrt[3]{x^2}$

$\sqrt[3]{x^{10}} = x^3\sqrt[3]{x}$

$= \sqrt[3]{x \cdot y \cdot y \cdot x \cdot x \cdot x \cdot y \cdot x \cdot y \cdot x}$

$= \sqrt[3]{x^3} \cdot \sqrt[3]{x^3} \cdot \sqrt[3]{x^3} \cdot \sqrt[3]{x}$

$x \cdot x \cdot x \cdot \sqrt[3]{x}$

Try

$\sqrt[4]{x^6} = x\sqrt[4]{x^2}$

$\sqrt[3]{x^8} = \sqrt[3]{x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x} = x^2\sqrt[3]{x^2}$

$\sqrt{x^7} = x^3\sqrt{x}$

$= \sqrt{x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x}$

$\sqrt{x^{10}} = x^5$

$\sqrt[3]{x^2} = \sqrt[3]{x^2}$

$\sqrt[4]{x^4} = x$

$\sqrt[3]{x^3} = x$

$\sqrt{x^2} = x$

$$\sqrt[3]{8x^5} = 2 \times \sqrt[3]{x^2}$$

$$\sqrt{8x^5} = \sqrt{8} = 2\sqrt{2} \quad \sqrt{x^5} = x^2\sqrt{x} \quad > \quad 2x^2\sqrt{2x}$$

Sect. 7.2 #1-16

$\sqrt{\ }$	$\sqrt[3]{\ }$
1	1
4	8
9	27
16	64
25	125
36	
49	
64	
81	
100	

$$\sqrt[3]{81} = \sqrt[3]{27} \cdot \sqrt[3]{3}$$

$$3\sqrt[3]{3}$$